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AUTHOR Qian, Gaoyin
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ABSTRACT

Studies from the interactive perspective regard reading and writing as processes which share a common knowledge base and have similar mental operations. First, according to this model, reading and writing are both interactive processes. Second, both readers and writers go through the same activities as planning, drafting, aligning, revising, monitoring, and checking outcomes. Also, readers and writers seem to share some mental operations by engaging in reflective thinking after they have finished with their respective texts. Research from the interactive perspective has shown that (1) the interactive model is more effective than two other models in teaching second and fifth graders; (2) writing affects both students' reading comprehension and critical thinking; and (3) combining reading with writing contributes to a wider range of both quantity and quality of revisions to writing than does writing without reading. The interactive model suggests that writing should be introduced to the students as soon as reading begins. Although it has been found that reading activity and instruction can influence writing ability and that writing instruction can enhance reading ability, quite often no such transfer between reading and writing occurs. Researchers anticipate that the 1990s will see efforts made to explore the reading writing relationship from the interactive perspective, the communicative perspective, and the collaborative perspective. There is a scarcity of research on the effect reading and writing have upon the critical thinking of high school students. (RS)

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Gaoyin Qian

University of Georgia

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Review of the Interactive Model: Reconsideration of Reading and Writing Relationship

It is generally accepted that there is significant relationship between reading and writing. The reading and writing relationship has long been investigated and acknowledged by researchers and instructors. More recent studies have offered insights to the reading and writing relationship. Some researchers have discovered that reading and writing interact (Shanahan, 1986, 1987), while others have found that writing working together with reading has significant influence not only on students' achievement in reading but also on the development of students' critical thinking (Bennet & Hodges, 1987; Tierney, Soter, O'Flahavan & McGinley, 1989). Studies from the interactive perspective regard reading and writing as processes. Researchers attempt to identify commonalities that exist in reading and writing. It is hypothesized that reading and writing share common knowledge base, and similar mental operations (Shanahan & Tierney, 1989).

First, reading and writing are both interactive processes. Readers construct the author's meaning by bringing up his background knowledge while writers compose for intended audience by associating his existing knowledge, penetrating the subject so as to gain insights out of it. According to schema theory, reading comprehension is an interactive process by which the reader's background knowledge is activated so that he can interpret the meaning in the text. During reading, the reader keeps reconstructing the author's message and adding to schemata present in memory. Composing is also an interactive process. As the writer constructs the meaning for an intended audience, he applies his present knowledge to the subject that he is writing. He also tries to penetrate the subject and gain insights by piecing together, coordinating, and structuring information so as to communicate his ideas with the intended audience. The author-reader relationship is critical both to reading comprehension and to creating meaning by composing (Teller, 1991).

Second, both readers and writers go through the same activities as planning, drafting, aligning, revising, monitoring and checking outcomes (Tierney & Pearson, 1983; Heller, 1991). Metacognitive theory is the basis for much research into the conscious manipulation of

CS010388

thinking while reading. Metacognition also refers to the knowledge the readers have about thinking and the ability to capitalize on such knowledge to monitor their own reading. Writers are also actively involved intellectually and emotionally in constructing meaning. The writer consciously monitors his or her word choice, sentence structure, or paragraph organization in order to achieve a purpose for writing and coherence of the composition.

Also, readers and writers seem to share some mental operations by thinking after they have finished with their respective texts. The concept of reflective thought is important to both reading and writing processes. June Birnbaum (1986) reviewed a number of studies concerned with the reflective thinking of good and poor readers. These studies suggested that "reflective thinking is central to proficiency in written language" whether the individual is engaged in reading or writing.

In addition to the common mental operations shared by reading and writing, there are quite a few specific areas where the close connections between reading and writing have been identified by many researchers (Shanahan & Tierney, 1989). They are in the areas of 1. vocabulary; 2. syntax; 3. narrative and expository text organization; 4. spelling and word recognition ability; 5. phonemic awareness; 6. writing mechanics; capitalization, punctuation, correct grammar usage, reading achievement; 7. spelling accuracy and reading fluency; 8. use of cohesion and reading achievement; 9. voice in composition and reading achievement; 10. motivation; 11. development of main idea in the writing of narratives; 12. development of background setting in narration and reading achievement; 13. patterns of response to literature; 14. creativity in reading and writing comprehension; 15. reading comprehension and writing productivity or fluency; and 16. sense of genre.

K. Goodman and Y. Goodman (1983) from a different perspective argued that there are some activities in which reading and writing take place almost simultaneously during the time that children grow into literacy. They emphasized that children not only learn to read by reading and write by writing but also they learn to read by writing and write by reading. They suggested that the children be exposed to a large amount of varied reading and writing in real use so that they can develop the ability to take the control of the two different modes of literacy.

Some Experimental Studies from the Interactive Perspective

Shanahan (1986) found in his experiment that of the three models, the interactive model is more effective to teach second and fifth graders than either the reading to writing model or the writing to reading model despite the fact that the reading to writing model is superior to the writing to reading approach. Besides, the study found some differences between the models about some variables. Shanahan's research in 1987 discovered that reading and writing are not identical although they share some knowledge in some variables. He argued that although reading and writing are highly correlated, the correlation is not significant enough to suggest that the rise of achievement in one will automatically lead to the improvement of the other. The conclusion is that reading and writing are significantly correlated but not identical. Statistics shows that, as Shanahan and Tierney (1989) reported, in all of the knowledge-precess studies, the correlations between reading and writing have been rather small, and usually of no more than moderate levels about .60. Rarely did researchers find specific reading and writing measures accounting for more than 30 to 40 % of the variance in each other. This further suggests that reading and writing instruction can not replace each other.

Bennett and Hodges' (1987) study is pioneering of its kind in the field because they discovered that writing exerts influence not only on reading and learning at lower cognitive level such as knowledge, retention of the information from the learning material but also on cognitive thinking such as application, analysis and evaluation. To be more exact, writing affects both students' reading comprehension and critical thinking.

In a comprehensive study, Tierney (1989) and his fellow researchers examined the effects of reading integrated with writing on students' thinking in comparison to the effects of the activation of background knowledge and questioning, which are purported to increase critical thinking in reading. They compared the students' first and second drafts across the categories such as additions, deletions, rewordings and mechanics for different treatment groups. Their quantitative and qualitative analyses revealed that combining reading with writing contributed to a wider range of both quantity and quality revisions than writing without reading. By examining the types of reasons given in the answer to the debriefing questions, the researchers found that the students who wrote prior to reading were thinking more evaluatively than those who did not write prior to reading. The evidence showed that writing seemed to function as a mode through which the students' ideas gained results and the students resolved disputes, while reading as a catalyst for opposing views or for further exploration of an idea. Revision also played an important role in fostering

students' thinking critically. At revising stage, students pursued the topic recursively, to rethink, reevaluate and refocus.

Instructional Implications

The interactive model suggests that writing should be introduced to the students as soon as reading begins. In classroom instruction, teachers should combine reading and writing, both of which will require instructional emphasis so as to enhance the students' competence in comprehension and composition. Research has already offered its empirical support for the values of reading and writing working together. It is apparent in Tierney's study (1989) that combining reading and writing will foster more critical thinking. They argued that a kind of dialectic emerged when writing and reading were integrated, which did not occur when students resorted to the single mode of activity such as only reading, only writing, only answering questions, or only participating in other introductory activities such as brainstorming. They believed that the integration of reading and writing for both readers and writers will lead to a symbiotic relationship between the two ways of thinking. It is in this symbiosis that students are provided with the opportunities to think more critically. By examining a topic across the two modes, the students pursued a deeper and truer vision of the subject from multiple perspectives and achieved a more evaluative stance with regard to their own understanding.

Issues and Challenges

Although it has been found that reading activity and instruction can influence writing ability and writing instruction can enhance reading ability, quite often no such transfer between reading and writing occurs. Cross reading and writing transfer of knowledge might not be automatic, but possibly could be facilitated by certain experiences or instruction.

The relation of reading and writing is not as simple as we think. Research reveals that some children tend to use particular aspects of knowledge or process well in reading but not to be able to do so in writing; others evidence an opposite pattern. There are some children who are good writers but poor readers or vice verse. Statistics shows that (Belanger, 1987) as many as one out of five children appear to fall into these unexpected categories.

Another issue with regard to reading-writing relations concerns the role of an intelligence factor in the correlations. Shanahan and Tierney (1989) hypothesized that reading and writing relation could be a simple artifact due to an under-developed theoretical model. This is a difficult criticism to refute because most of the studies have not employed any type of intelligence control for various reasons.

Also, there have been some important challenges to the notion that reading and writing have the influence upon each other and upon critical thinking. The research done by Oehlkers, Smith, Jensen, and Dillingofski in 1971 (cited in Stotsky, 1983) reported that both the first graders and fourth graders made no significant achievement either on word recognition tests or short comprehension tests after they were offered the writing program. More recently Ferris, Snyder and Langer (cited in Shanahan, 1987) suggested that the influence of writing process approach may have no impact on comprehension and that correlation between reading and writing is not significant on the basis of their investigations.

Further Investigation

During the last two decades, researchers seem to have focused their investigation on the three different models (reading to writing model, writing to reading model and interactive model). Shanahan and Tierney (1989) anticipated that 1990's will see the effort to be made to explore the reading and writing relation from three different perspectives (interactive perspective, communicative perspective and collaborative perspective). Briefly, the studies from communicative perspective emphasize communication by treating the reading-writing relationship as a social relationship between readers and writers while the studies from collaborative perspective focus the pursuit of impact of using reading and writing together to accomplish various tasks.

One methodological problem in the experimental study is to find reliable measurement to assess the cognitive thinking of the students in the exploration of reading and writing relationship. At the end of 1980's there were some studies done by resorting to both quantitative and qualitative methods. The study done by Tierney (1989) is a kind of pioneering work in complementing quantitative research with qualitative analysis.

It is evident that reading and writing can not only help students with retention of the information from the reading materials but also foster students' critical thinking, which plays an important role in the students' achievement of learning. It is generally believed that the students in high schools or above tend to gain more benefits from the reading and writing to critical thinking approach than the students who remain at elementary school level. This may be the reason that more studies are seen at college level than at elementary level.

There is scarcity of the study on the effect that reading and writing have upon critical thinking of high school students. This is the field worth exploring because most of the experimental studies in this area have examined the influence of writing upon lower level cognitive skills although there are a few case studies (Bennet & Hodges, 1987; Marshall, 1987) done to investigate the effect of infusion of writing upon students' achievement in reading literary texts both at college and secondary school level.

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